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Will Flow Experience Lead to Better Outcomes in Online Shopping?

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ABSTRACT

This paper reports the results of a study examining users' perceptions of flow and outcomes in online shopping. Three characteristics of flow activities and six dimensions of flow are predicted to affect outcomes as measured by perceived usefulness, pleasure, and behavior intentions. Results show that flow affects all outcome measures. Implications for future research and practice are discussed.

Keywords:

Flow experience, online shopping,

INTRODUCTION

People experience flow when browsing online as in many other activities. Flow has been found to be positively related to desirable outcomes of interacting with computers and the Internet, such as exploratory behavior, revisit and purchase intentions, and attitude toward websites (Koufaris 2002; Novak et al. 2000; Skadberg and Kimmel 2004). The purpose of this study is to investigate the effect of flow, characteristics of flow activity and flow experiences, during online shopping and web surfing in terms of desirable interaction outcomes. They are perceived usefulness, pleasure, and behavioral intentions. Achieving these results will help an e-business to gain competitive advantage. Flow experience is a wholesome experience sometimes people undergo when interacting with information technology. If the relationship between flow experience and the outcome variables is established (as in the current paper), how to design human computer interaction to foster flow experience will be of interest of both researchers and practitioners.

FLOW EXPERIENCE

Csikszentmihalyi developed the concept of flow to represent a "peculiar dynamic state—the holistic sensation that people feel when they act with total involvement" (Csikszentmihalyi 1975, p. 36) and an "ordered, negentropic state of consciousness" (Csikszentmihalyi 1988, p. 34). In this state, actions transit seamlessly into another, displaying an inner logic of their own and harmony. The actor experiences a smooth transition and total control of his/her actions without distraction. The characteristics of flow experience as described by Csikszentmihalyi (1988) include: (1) focused *concentration* on task at hand (also referred to as attention and immersion); (2) "merging of activity and awareness" (*mergence*); (3) a sense of being in *control*; (4) *transformation of time* that makes time appear to pass very slowly or very rapidly compared to ordinary experience (it is also called time distortion, and time dissociation); (5) a loss of self-consciousness and feeling of *transcendence of self*, and (6) an *autotelic experience,* which is intrinsically rewarding. This experience has been simply referred to as enjoyment in some research. Certain characteristics of activities and tasks seem to make them an activity with which people get into flow easier. According to Csikszentmihalyi, the common characteristics are the task should have (1) *a clear goal*, (2) *a quick, unambiguous feedback mechanism*, and (3) *a challenge level in balance of the person's skill*.

In *Information* Systems (IS) research, flow has been integrated into studies of (Trevino and Webster 1992) and human-computer interaction (Ghani and Deshpande 1994; Webster et al. 1993). Flow theory has been applied to studying computer mediated communications, including a variety of Internet activities (Chen et al. 1999; Hoffman and Novak 1996; Koufaris 2002). In more than 50 empirical studies, flow or variables similar to it have been found to be related to desirable electronic

commerce outcomes, such as positive affect (Chen 2006), positive perceptions of and attitudes toward websites (Agarwal and Karahanna 2000; Huang 2003a), exploratory behavior with increased learning (Skadberg and Kimmel 2004), and future intentions to revisit and purchase (Koufaris 2002; Siekpe 2005; Wu and Chang 2005).

Several quantitative studies of flow in computer mediated environments provide evidence that the effects of three characteristics of flow activities – balance of challenge and skill, goal clarity, and feedback – are relevant to the IS context (Kiili 2005; Pace 2004; Pilke 2004; Rettie 2001; Shoham 2004). In these studies, flow experience is described as a high focused state. When in flow, visitors of websites seem automatically react to the website and have the control of navigation. They lose track of time, and sometimes forget about their other daily concerns. They feel refreshed. Thus, all dimensions of flow in the original model are present to some degrees when people experience flow in online environments.

However, the majority of quantitative, model-testing studies of flow in IS have only focused on a subset of characteristics of flow activity and experience. First, among the three flow activity characteristics balance of challenge and skill is the most studies while feedback and goal clarity only have been included in six studies (Chan and Ahern 1999; Chan and Repman 1999; Chen 2006; Chen et al. 1998, Davis and Wiedenbeck 2001; van Schaik and Ling 2003; Webster and Ho 1997). Second, among the six characteristics of flow, some, such as concentration, control, transformation of time, enjoyment, are often studied, while mergence of action and awareness and transcendence of self are rarely included, except a handful studies (Chen 2006; Davis and Wiedenbeck 2001; Moon and Kim 2001; van Schaik and Ling 2003). Only four studies incorporate all characteristics of flow activity and experience (Chan and Ahern 1999; Chan and Repman 1999; Chen 2006; Chen and Nilan 1999). This results in different operationalizations of flow and inconsistent flow models in IS field. As Finneran and Zhang observed (2005), it presents a difficulty to generalize and synthesize results and theories.

RESEARCH MODEL

Cognitive absorption, a concept similar to flow, was found to positively influence the perceived usefulness of the web technology (Agarwal and Karahanna 2000). Particularly, attention was found to be a significant facilitator of utilitarian performance (Huang 2003a). Emotions, such as pleasure, are important components of intrinsically valuable time and consumer hedonic value. Since flow is an engrossing, highly enjoyable experience, it is only natural for people to develop a positive emotion when in flow (Chen 2006, Csikszentmihalyi and LeFreve 1989; Hoffman and Novak 1996; Huang 2003a, Huang 2003b). Behaviors, such as increased exploration and learning, are often found to be the results of flow in computer mediated environments (Novak et al. 2000, Skadberg and Kimmel 2004). Intentions to return and purchase are found to be associated with flow experience (Nel et al. 1999, Koufaris 2002, Skadberg and Kimmel 2004, Wu and Chang 2005). Studying these behaviors is of interest to researchers and retailers.

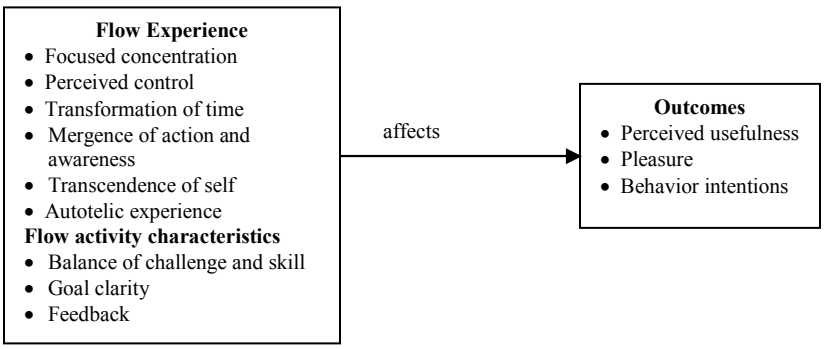

Figure 1. Research Model

The central research question examined in this study is whether there is a relationship between interaction outcomes and flow in general and characteristics of flow activity and experiences in particular. The presence of this relationship would suggest that interventions designed to encourage users to enter a state of flow may improve interaction outcomes. Although there is quite abundant evidence of positive effects of flow on all three outcomes in prior research, no research looked into individual characteristics of flow activity and experiences in terms of their impact on outcomes.

This research question is tested by a series of hypotheses that are stated below.

H1: There is a relationship between flow and perceived usefulness.
H2: There is a relationship between flow and pleasure.
H3: There is a relationship between flow and behavior intentions.

RESEARCH METHODOLOGY

Flow is measured in the study in three ways: (1) an overall flow score reported by the users, (2) scores for the six characteristics of flow experience, and (3) scores for the three characteristics of flow activities. Interaction outcomes are measured in three ways: (1) perceived usefulness, (2) pleasure, and (3) behavior intentions. Three flow activity characteristics and six dimensions were measured using items mainly adapted from the Flow State Scale (Jackson and Marsh 1996) and other previous flow research in IS (e.g., Agarwal and Karahanna 2000. Measure for perceived usefulness was adapted from Koufirs 2002. Measure for pleasure was adapted from Holbrook et al. 1984. Measure for behavior intentions was adapted from various prior research (Donovan and Rossiter 1982; Koufaris 2002; Palmer 2002). All these measures had exhibited good reliability in previous studies. All the questions were in a 7-point Likert scale format with 1 as "strongly disagree" and 7 as "strongly agree." A sample question of concentration is "My attention was focused entirely on what I was doing." A sample question of perceived control is "I felt in total control of what I was doing." A sample question of mergence of action and awareness is "Things just seemed to be happening automatically." A sample question of transformation of time is "the way time passed seemed to be different from normal." A sample question of transcendence of self is "I was not worried about my performance during shopping." A sample question of autotelic experience is "I found the experience extremely rewarding." A sample question of goal clarity is "I know clearly what I wanted to do." A sample question of balance of challenge and skill is "I felt I was competent enough to meet the high demand of the situation." A sample question of feedback is "It was really clear to me that I was doing well." A sample question of perceived usefulness is "Using the site improve my shopping performance." A sample question of pleasure "unhappy/happy". A sample question of behavioral intentions is "Given the chances, I'd like to return to the site in the future."

Real websites have been used effectively in other research (Koufaris 2002; Skadberg and Kimmel 2004). Eight websites within two product categories (book & magazine and computer) were chosen for this study. Websites used in the study were Amazon.com, Booksamillion.com, J&R music and computer, Newegg.com, Barnes&Noble, Buy.com, Gateway.com, and Pcconnection.com. They are representative sample of popular eCommerce websites.

Subjects from a variety of majors were recruited at a major American university. Students got extra points for class by participating in the study. A package of documents and instructions was given to subjects when they arrived. Upon agreeing to participate in the study, subjects were randomly assigned to one of the eight pre-selected websites and were asked to act like a real shopper to find something they were interested in purchasing on that site. Data were collected while subjects were surfing the site.

DATA ANALYSIS

A total of 354 subjects participated in the study, including 211 female and 143 male students. Among over 50 items on the questionnaire, no differences in responses due to gender are found, except one item for mergence. The average age is 21.2 years.

Reliability

First reliability of the measures was examined. All demonstrated sufficient Cronbach's alpha above .70, shown in Table 1.

Construct	# of items	Cronbach's alpha
Concentration	4	.895
Mergence	4	.718
Perceived Control	4	.901
Transformation of time	4	.801
Transcendence of self	4	.828
Autotelic experience	4	.911
Feedback	4	.877
Goal clarity	4	.928
Balance of challenge and skill	2	.740
Perceived usefulness	4	.811
Pleasure	6	.847
Behavior intention	4	.932

Table 1. Construct Reliability

Testing Hypotheses

Each of the three hypotheses is tested in three ways. First, users' overall self-reported flow score is used to test the relationship between flow and each of the three outcomes. Flow score is the dependent variable. Second, a multiple regression model using the six characteristics of flow (focused concentration, perceived control, transformation of time, mergence of action and awareness, transcendence of self, and autotelic experience) as independent variables is tested. Finally, a multiple regression model using the three characteristics of flow activities (goal clarity, feedback, and balance of challenge and skill) as independent variables is tested.

For perceived usefulness, all three models support the proposition that flow is related to visitors' perception of usefulness of the website. The overall flow score predicts perceived usefulness ($p<.001$, $b=.530$). Likewise, the model using the six characteristics of flow as independent variables predicts perceived usefulness ($p<.001$). Among them, the only significant characteristics are transformation of time ($p=.007$, $b=-.108$) and autotelic experience ($p<.001$, $b=634$). The regression model using the three characteristics of flow activities as independent variables also predicts perceived usefulness ($p<.001$). Feedback is the only significant independent variable ($p<.001$, $b=.244$).

For pleasure, all three models support the proposition that flow is related to visitors' pleasure. The overall flow score predicts pleasure ($p<.001$, $b=.603$). Similarly, the model using the six characteristics of flow as independent variables predicts pleasure ($p<.001$). Both transformation of time and autotelic experience have significant coefficients, with $p=.015$, $b=-.176$ and $p<.001$, $b=.641$, respectively. The regression model using the three characteristics of flow activities as independent variables also predicts pleasure ($p<.001$). Both goal clarity and feedback are significant independent variable, with $p=.015$, $b=.146$ and $p<.001$, $b=.360$, respectively.

For behavioral intentions, all three of models support the proposition that flow is related to it. The overall flow score predicts behavioral intentions ($p<.001$, $b=.606$). The model using the six characteristics of flow as independent variables predicts behavioral intentions ($p<.001$). Only autotelic experience has significant coefficients ($p<.000$, $b= .706$). The regression model using the three characteristics of flow activities as independent variables also predicts pleasure ($p<.001$). Both goal clarity and feedback are significant independent variable, with $p=.003$, $b=.179$ and $p<.001$, $b=.362$, respectively.

Discussion and Conclusion

The results of the tests of the hypotheses are summarized in Table 2.

Hypotheses	Results
H1: There is a relationship between flow and perceived usefulness.	Supported.
H2: There is a relationship between flow and pleasure.	Supported.
H3: There is a relationship between flow and behavioral intention.	Supported.

Table 2. Summary of Hypothesis Tests

Overall, we find strong support for the hypothesized relationships between flow and the other three measures of interaction outcomes. Specifically, flow is shown to be related to visitors' perception of usefulness of the website, to visitors' feeling of pleasure, and to their future behavioral intentions in terms of revisits and purchase. The findings are consistent with prior research. In addition, we further investigate individual impact of each characteristics of flow activity and flow experience on interaction outcomes. Among the six characteristics of flow experience, it seems autotelic experience is the most significant driver in enhancing visitor's pleasure, improve users' perception of usefulness, and leading to desirable behavioral intentions. In contrast, other characteristics show non-significant effects. One possible explanation is that autotelic experience is a very similar concept to enjoyment, thus to pleasure too. It is natural it has high correlation with pleasure. Also, plenty research supports the relationship between enjoyment and perceived usefulness and between perceived usefulness and behavioral intentions. It is not surprising that autotelic experience relates to these constructs. Then the question becomes whether we should only focus on autotelic experience since other flow experience dimensions only have marginal effects on outcomes. Another possible explanation of this finding is that the six flow experience characteristics are independents from each other. It could be that certain characteristics contribute to the autotelic experience. An ad hoc regression analysis shows concentration ($p<.001$), transformation of time ($p<.001$), transcendence of self ($p=.05$), and mergence of action and awareness ($p<.001$) have significant effect on autotelic experience. In addition, concentration ($p=.002$), perceived control ($p=.05$), transformation of time ($p=.007$), and transcendence of self ($p<.001$) have significant effect on perceived usefulness, without autotelic experiences as one of the independent variables. The results clearly shows role of autotelic experience as the mediating factor of other flow experience dimensions. Thus, although other flow experience dimensions have less direct impact on outcomes, they still affect dependent variables indirectly. In research we should not ignore these dimensions and in practice, we should find ways to foster these aspects of flow experience in order to achieve desired outcomes.

Among the three flow activity characteristics, goal clarity and feedback have significant effect on perceived usefulness, pleasure, and behavioral intentions, while balance of challenge and skill has no significant impact, which is surprising. One possible explanation is that online shopping and Internet browsing is not a challenging task to begin with. Subjects reported fairly low score on challenge (2.89 out o f7) and high score on their computer and Internet skills (5.5 out of 7). There is little variance. Both goal clarity and feedback get less attention in prior research. Our finding shows the importance of these two factors. More research should be conducted in future to study the impact of flow activity characteristics.

The practical implication of the findings is that flow is important factor to website and e-commerce success since it is related to perceived usefulness, visitor pleasure, and possible future revisit and purchase. Designers should strive to provide visitors an engaging and enjoyable experience. Particularly, when designing websites, in addition to make it visually appealing and fun, providing plenty clear cues of how visitors are doing in accomplishing their tasks will help not only reduce navigation problem and confusion but facilitate flow experience. Although from designer's point of view, it is hard to create a website catering to all skill levels and user objectives, the finding echoes one important aspect of design: knowing the end users. Then personalization technologies can be used to develop more adaptive websites for different goals and levels of skill.

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